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The Treatment of Extra-Uterine Pregnancy, Ruptured in the Early Months, by Vaginal Puncture and Drainage.

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THE TREATMENT OF EXTRA-UTERINE PREGNANCY, RUPTURED IN THE EARLY MONTHS, BY VAGINAL PUNCTURE AND DRAINAGE.*

BY HOWARD KELLY, M. D.,
Professor of Gynæcology in the Johns Hopkins University, Baltimore, Md.

At a meeting of the Johns Hopkins Hospital Medical Society, October 23, 1893, I advocated the treatment of ruptured extra-uterine pregnancy by a vaginal opening for the removal of the products, followed by drainage. My first case was operated upon October 27, 1892, and was one of the intraligamentary form. I made an exploratory cœliotomy, and found a mass on the right side, fourteen by ten centimetres in size, to which the whole omentum was adherent, dragging down the transverse colon; there were also dense adhesions to the small intestine. The uterus lay to the left. The peritonæum at the brim of the pelvis posteriorly passed directly on to the sac, without dipping into the pelvis, and anteriorly and laterally it was lifted up to such an extent by the sac that it lay in direct contact with the anterior abdominal wall four centimetres above Poupart's ligament.

As a complete enucleation of this subperitoneal mass was out of the question, I determined to drain it. The colon was first freed by tying the omentum off from side to side. A free incision was then made into the sac above Poupart's ligament, and sixty cubic centimetres of fluid blood and two hundred and forty cubic centimetres of clots removed. The sac was washed out and drained with gauze. There was no marked hæmorrhage; the duration of the entire operation was thirty-seven minutes.

* Read before the American Gynæcological Society, May 27, 1896.

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The patient made an uninterrupted recovery, leaving the hospital on the thirty-second day.

The next case occurred February 22, 1893. The patient, a stout woman, was anæmic and rapidly losing flesh, and had a dry tongue and lips and sore buccal surfaces. She suffered from difficult, painful micturition, and was constipated, passing blood and mucus from the rectum. The abdomen was tender on pressure and markedly distended. The pelvis was choked with a tender mass, extending 7.5 centimetres above the symphysis.

The abdomen was opened March 1, 1893; the sac filled the right posterior quadrant of the pelvis where the peritonæum appeared to go directly from the brim of the pelvis on to the top of the sac.

I tapped the sac through the abdominal incision, and drew off some fœtid gas; I then closed the puncture hole with two sutures, and explored by the rectum, but failed to find any opening there, although a few clots of blood escaped.

I then made a free opening into the vault of the vagina and evacuated the clotted blood and placenta filling the sac, and drained it *per vaginam.* The patient made a rapid recovery, in spite of her bad condition. For two weeks there was some fæcal discharge by the vagina. She left the hospital well in the sixth week.

The next case is the one reported in the *Johns Hopkins Hospital Bulletin* for November, 1893. The patient was in a critical condition, with a feeble pulse, and on opening the abdomen I found such extensive adhesions that enucleation under the circumstances was impossible.

The question therefore arose whether to abandon the case or to try the method so successful in the two previous cases. I decided upon the latter plan, and made a careful bimanual examination with one hand in the abdomen and the other in the vagina, outlining perfectly the relations of the sac. I then pushed the tumor down and the vault of the vagina up until it met the sac, when I thrust a pair of sharp-pointed scissors into the tumor through the posterior *cul-de-sac.* The opening was enlarged to an inch in diameter, the *debris* of clotted blood evacuated and the sac washed out by means of a glass douche nozzle, and afterward drained with gauze. The patient made a rapid and complete recovery.

I have since operated in this way on ten additional cases of extra-uterine pregnancy.

I have had, therefore, thirteen cases in all treated by vaginal puncture and drainage without any untoward sequelæ. One patient, comatose when operated upon, died a few days later of nephritis.

Class of Cases treated.—Cases suitable for this mode of treatment are the extra-uterine pregnancies which rupture in the early months, including therefore the vast majority of all cases. Since I have begun to follow this mode of treatment, all the cases which have come to me have been of this class.

Vaginal puncture and drainage is not a suitable plan of treatment (a) in an unruptured extra-uterine pregnancy, or (b) in a recently ruptured one, or (c) in advanced extra-uterine pregnancy.

I do not compare this operation with the removal *per vaginam* of the dead fœtus presenting at the vaginal vault (elytrotomy) in an advanced pregnancy, followed by drainage of the sac, nor do I compare it with cases in which suppuration of the sac has occurred, which belong rather to the pelvic abscesses, although I treat both classes of cases in precisely the same way. These cases are referred to by Hermann (*Trans. London Obstetrical Society*, vol. xxix, p. 429), who states that, when the effusion of blood is followed by pyrexia, the indications for incision of the vagina are the same as those in hæmatocele from any other cause. He says that, when interference is called for to arrest hæmorrhage soon after rupture has taken place, abdominal section is more likely to succeed than vaginal.

The class of cases to which I refer are not clearly defined by Hermann, and are the commonest of all; they are those in which a succession of ruptures has occurred, each time adding to the accumulation of clots in the abdomen.

I have only included one suppurative case with clots on my list, and that simply to report all the cases I have had. In the *American Gynæcological and Obstetrical Journal* (May, 1896, p. 598), Dr. G. W. Reynolds reports a case of an extra-uterine pregnancy which he felt certain had ruptured into the broad ligament, and in which he removed a three months' fœtus with placenta and cord by a vaginal incision. A gauze drain was inserted, and the patient rapidly recovered.

I pursue the following method in performing this operation:

1. *Examination.*—After a careful consideration of the history, a thorough examination of the extra-uterine sac is made bimanually, both by the vagina and by the rectum, in order to determine its exact relationship to the vaginal vault.

2. *Position of Patient.*—The patient is then put into the lithotomy position, and the vagina thoroughly cleansed.

3. *Fixing the Cervix.*—The posterior lip of the cervix is caught with tenaculum forceps and drawn slightly forward.

4. *Opening the Sac.*—With the index finger resting on the prominent part of the sac posterior to the cervix to act as a guide, a pair of sharp-pointed scissors is thrust through the septum into the sac, taking care to follow the line of the axis of the pelvis. If this is not done, there is risk of puncturing the rectum by carrying the points too far back. If the rectum lies near to the vaginal vault, it is best to protect it from injury by the middle finger resting on the sac in the bowel and the index finger on the vaginal vault, thus straddling the perinæum. If the sac does not lie so close to the vaginal vault as to be easily felt there, it may often be brought into relationship with it by the pressure of an assistant's hand above when the puncture may be made.

5. *Enlarging the Opening.*—When the scissors have entered the sac they are spread and withdrawn wide open. This makes the hole bigger. A uterine dilator is then introduced, and the opening stretched to 1.3 to 3.5 centimetres in diameter.

6. *Opening the Sac.*—As soon as the scissors are spread, a little stream of dark telltale blood runs down the vagina confirming the diagnosis. After dilating the opening, the sac is emptied of blood clots, placenta, and fœtus by the index and middle fingers. This is done with extreme care, using the fingers within the sac, and assisting their action by the other hand employed outside to make counter-pressure through the abdominal wall. In this way the sac is freely handled, its various parts kept within reach, clots are detached, and the contents removed until nothing but a shell remains—all without opening the peritoneal cavity.

Should the peritonæum be opened accidentally, no harm will result if the sac is well cleaned out and efficient drainage is used.

If the fingers possess a good tactile sense, the rough limiting walls of the sac and the adhering clots will be easily differentiated. I have several times recognized the firm, round tube casts, and brought them out broken up; the rounded sides of the pieces showed plainly that they had formed part of a cylinder.

7. *Washing out the Sac.*—If the sac is well closed off from the peritonæum, it is a help in bringing away the blood clots to wash

it out at intervals with a normal salt solution; I do this also at the end of the cleansing process, before packing.

8. *The Gauze Drain.*—The sac is then drained by a strip of plain or washed iodoform gauze, about three centimetres wide, stuffed loosely into its cavity with a packer. The gauze must fit loosely, so as not to stop the outward flow.

9. *After Care.*—I leave the gauze in for three or four days, during which time there may be a free serous flow. I then day by day withdraw it, and in from five to seven days remove it altogether, and then daily wash out the sac with a boric-acid solution, putting a piece of gauze into the opening each time to keep it from closing too fast.

In this way the sac contracts and closes in from two to six weeks, often without any evident suppuration, and in all cases without any marked purulent discharge.

In four cases out of the thirteen I opened the abdomen before evacuating and draining the sac, by the vagina in three of them, and above Poupart's ligament in one. I did this in the first two instances expecting to enucleate the mass by the abdomen, but, finding that this would greatly endanger the patient's life, I turned to the vaginal route.

With my present established technique I find it but rarely necessary to open the abdomen. I did this, however, in one of my most recent cases (No. XII), in my Sanatorium, because the history of rupture was so negative, and the encysted mass of blood at the left uterine cornu formed such a well-defined tumor, that I felt doubtful whether it might not be an unruptured extra-uterine pregnancy. On opening the abdomen, and finding the sac well covered in by sigmoid, rectal and vesical adhesions, I evacuated it *per vaginam*, and drained it as usual.

The Advantages of this Operation.—The one great advantage is, that, in accordance with the most recent and best gynæcological practice, none of the pelvic structures are removed while the hæmatoma is opened, evacuated, and drained. I would anticipate any objection by stating that my patients have all recovered perfect health, and there have been no untoward sequelæ.

A further advantage of great importance is the fact that a serious abdominal operation is often avoided, and the adhesions walling the sac in are let alone, while it is simply, quickly, and safely opened by the vagina.

In several of my cases the patients were in such condition that they could not have survived any prolonged abdominal operation.

The vaginal operation in this way reduces the mortality.

The dangers of the operation are (1) the possibility of a mistaken diagnosis, (2) the risk of opening the peritonæum, and (3) the risk of a fatal hæmorrhage, (4) as well as the liability to sepsis through the open vaginal vault.

Although I made a correct diagnosis of extra-uterine pregnancy in each of the thirteen cases here reported, I diagnosed this condition in two cases where it did not exist.

One was a dermoid cyst about as big as my fist, which I punctured, evacuated, and removed, and the other was a pelvic abscess, which I also opened and drained. Both cases recovered.

Hæmorrhage is the most serious risk incurred, and the query naturally arises why it does not more frequently follow the opening of the sac, the detachment of the clots, and the relief of the pressure they afford the sac walls. The answer to this must be that the vessels are filled with firm thrombi, and all tendency to active bleeding is past.

In the history of the patient who bled persistently from the vaginal puncture, necessitating the immediate removal of the sac by the abdomen, there was nothing to indicate anything different from the five preceding or the six cases following. She was forty-one years old, the mother of six children, the youngest two years and a half old. About three months before I saw her, at a menstrual period, she was suddenly seized with a sharp pain in the lower abdomen, and became very faint, without losing consciousness. There was a mere "show" at the time, but after the pain she had a free bloody discharge for four weeks. The abdomen was enlarged and tender, and she had three attacks after the first, and was compelled to go to bed each time. I found her greatly debilitated and anæmic, with constipation, and a pulse of 100. A large globular mass filled both sides of the pelvis, being especially prominent on the right side.

The sac was punctured by the vagina, and the clotted blood and a three months' fœtus removed. This was followed by a free discharge of bright arterial blood, which oozed persistently out of the incision, and could not be controlled by packing.

I therefore at once opened the abdomen, and, finding the tubes and ovaries so densely matted together with the uterus, I removed them all by hystero-salpingo-oöphorectomy, bringing up the ectopic

sac with its placenta; seven hundred cubic centimetres of salt solution was infused into the cellular tissue to make up the loss of volume in the circulation.

The patient was discharged on the twenty-ninth day completely recovered.

On account of the possibility of this accident, I insist that the operator should always be prepared to open the abdomen if necessary when he undertakes to evacuate the sac by a vaginal opening.

The following carefully prepared records of my cases have been arranged by Dr. J. E. Stokes, of the Johns Hopkins Hospital:

CASE I.—Mrs. F. B. W., admitted October 23, 1892, aged twenty-two years; white; married one year; 0-para; no miscarriages.

Past Health.—Good. Had diphtheria when quite young; no sequelæ noted. For last year has been feeling "drowsy" and "out of sorts."

Menstrual History.—First menses, fifteenth year; regular; monthly flow scant, lasting six days; pain marked first day.

History of Present Complaint.—Patient last menstruated twelve weeks ago—*i. e.*, six weeks before present attack. Menstruation normal. Early morning of the day of the attack patient had a slight bloody discharge *per vaginam;* later during that morning, while walking across the yard, was seized with a sudden, sharp pain in right iliac region. She immediately went to bed, the pain continuing for the following five hours. No chill; nor did she appreciate any rise of temperature. The attacks of pain have been more or less constant, though diminished in severity and frequency, of late. The last marked attack was ten days ago, lasting four hours.

Immediate Condition.—Anæmic; slight bloody discharge; pain in right iliac region, paroxysmal in character; urine normal.

Diagnosis.—Extra-uterine pregnancy; right tubal rupture.

Operation, February 7, 1892.—(1) Exploratory cœliotomy, followed by (2) extraperitoneal incision into sac above Poupart's ligament. Removal of 240 c. c. of clotted blood. Pack introduced; time, thirty-seven minutes.

1. *Median incision* 10 cm.; walls very vascular; peritonæum dark, blackish in appearance; 60 c. c. fluid blood in cavity. Sac exposed on right side invested by whole omentum, which displaced transverse colon downward. Sac globular, about 14 cm. by 10 cm.,

corresponding to normal position of tube. Flat, vascular, dense adhesions to small intestines; peritonæum from brim of pelvis posteriorly goes directly over on to sac, and laterally over on to abdominal wall about 4 cm. above Poupart's ligament. Whole omentum doubly ligated and cut off close to transverse colon.

2. *Lateral incision* 2 cm. above and parallel to Poupart's ligament, 5 cm. in length. Deep epigastric artery and vein exposed at its middle and ligated; sac opened; 240 c. c. clotted blood and shreds of membranes evacuated; sac washed out; no fresh hæmorrhage. Pack introduced: iodoform gauze, five pieces, 44 cm. in length. Pack removed eighth day, small amount of bloody discharge coming away.

Convalescence uninterrupted. Discharged thirty-second day. Result, well. Slight sinus an inch to an inch and a half in depth at seat of lateral incision.

CASE II.—Mrs. L. C., admitted February 22, 1893, aged thirty-five years; white; married fourteen years; VI-para, children aged from twelve and six years. Labors easy; usually in bed a week; no post-puerperal trouble; no miscarriages.

Past Health.—Has always been perfectly healthy.

Menstrual History.—First menses, eleventh year; regular; monthly flow normal in amount, lasting three to seven days; painless.

History of Present Complaint.—Missed menstrual flow in November—*i. e.*, three months ago. In December, at the time when regular period should appear, she first began to have severe bearing-down pains, resembling those of labor, and at the same time passed three clotted, fleshy masses. Since the passage of these clots has had a constant thick, blackish discharge from vagina. At the same time pain has been sharp, cramplike in character, with a severe backache, compelling patient to remain most of the time in bed. For last three days discharge has been yellowish in color.

Immediate Condition.—Has lost flesh rapidly; appetite poor; tongue dry and red; buccal surfaces of cheek sore; lips dry and cracked; anæmic; slight yellowish tint to skin; bowels very constipated; micturition difficult and painful. Urine thick and very yellow in appearance; on analysis, normal. At times passes blood and mucus from rectum. Abdomen exceedingly tender and sensitive to pressure.

Night before operation patient became greatly excited, rising

up in bed, moving head from side to side, working arms and legs up and down, and crying. Condition one of marked excitability.

Examination.—Abdomen markedly distended; resonant, except over lower part, where the resonance is impaired; outlet relaxed. Cervix just within outlet superficially soft, but in fact quite hard. Uterus seems to be anteflexed, fixed in position. Pelvis on right and left side posteriorly, filled up with a mass which extends up above pelvis about three inches, most marked on right side; very sensitive.

Diagnosis.—Extra-uterine pregnancy; right tubal rupture into rectum.

Operation, March 1, 1893.—1. Exploratory cœliotomy, with inspection of sac. 2. Puncture and drainage of sac *per vaginam.*

(1) Incision 12 cm. through very fat walls 8 cm. thick. Sac on right side filling right posterior quadrant of pelvis, top of sac passing directly over on to peritonæum above brim of pelvis. Also no cavity posteriorly, but anteriorly to sac depth of pelvis but little affected. Uterus flat on right of cyst. Tapped sac, drawing off fœtid gas. Closed tap hole with two silk sutures, then examined *per rectum.* This was followed by free flow of small clots. No opening could be felt lower, although cyst was hard on rectum above utero-sacral ligaments.

(2) Free opening next made into vault of vagina; clots and placenta cleaned out; sac packed to drain *per vaginam.*

Convalescence rapid and uninterrupted. For the first two weeks succeeding operation had discharge of fæcal matter *per vaginam.* Discharged on sixth week, well; no pain; little or no vaginal discharge for a week; mental condition normal.

Case III.—M. S. L., admitted September 15, 1893, aged twenty-seven years; white; married eleven years; IV-para, from eight to four years; labors easy, non-instrumental; remained in bed fourteen days; no post-puerperal difficulty; two miscarriages; no trouble.

Past History.—Good; scarlet fever during adult life; has done "farm work" for several years.

Menstrual History.—First menses about fourteenth year; regular; monthly flow scant, lasting three days; no pain.

History of Present Complaint.—Patient menstruated on July 1st —*i. e.,* nine weeks before present trouble; flow was moderate in amount, lasting three days; pain more marked than ever before —dull, aching in character, through abdomen generally. August,

menstrual flow absent, though had pain, and abdomen seemed swollen. In September flow commenced; was very profuse, but was not accompanied by any pain. Took medicine to check it; no lumps or clots. At no one time has patient had any severe paroxysm of pain, nor has she felt faint. The pain which started up in August—at the time she should have had her "period," and which has continued up to present time—has been a burning, stinging one in character, with a pressing-down sensation through hypogastric region.

Immediate Condition.—Patient pale and somewhat anæmic; bowels constipated; no urinary difficulty; analyses normal; pulse, 125; temperature, 100.6°. Talks very irrationally at times; seemingly in a semi-delirium condition.

Examination.—Abdomen markedly distended; skin above umbilicus cracked and fishlike in appearance; darker than surrounding area; greatest fullness in epigastric region.

Mensuration.—From umbilicus to ensiform, 16 cm.; from umbilicus to pubes, 17 cm.; greatest circumference at umbilicus, 76.5 cm. On palpation, whole abdomen softish and sensitive. In suprapubic region there is a hard and very sensitive mass extending about 11 cm. above pubic arch. Examination *per vaginam* abandoned on account of extreme tenderness.

Diagnosis.—Extra-uterine pregnancy, tubal.

Operation.—Puncture and drainage of sac *per vaginam;* duration, eight min. +. Patient first examined under ether. Prominence over symphysis about 8×6 cm., and raised about 2 cm. Tympanitic on percussion. *Per vaginam,* cervix crowded forward in pelvis, and posterior to this an ovoid, bulging, fluctuating mass, apparently, on percussion, in direct relation to prominence over symphysis. Then bulging mass posterior to cervix aspirated and about 120 c. c. fluid blood evacuated. Sharp-pointed scissors then plunged in and withdrawn, opened, discharging blood and "handfuls" of dark and slate-colored clots. Prominence in abdomen then almost disappeared. Opening posterior to cervix then made about 4 cm. broad. Sac washed out with glass irrigating nozzle, followed by escape of large clots. Cavity collapsed; found to fill whole pelvis and to rise up in abdomen several centimetres above superior strait. Walls smooth. Pack not introduced into cavity, vagina being only packed. No hæmorrhage.

Convalescence uninterrupted. Pack removed second day, perfectly sweet. Marked diminution in pain. The night of the second day patient had a slight hæmorrhage; no systemic effect noted. After this, patient's improvement was marked and continuous. Discharged on thirty-sixth day, well. Face full; complexion good; mental condition normal; no pain; no vaginal discharge; "feels well and strong."

Case IV.—Mrs. L. S., admitted February 27, 1894, aged twenty-six years; white; married four years; O-para; no miscarriages. Health since marriage much the same as before it.

Past History.—Has lived rather a sedentary life; has been strong and active. Two uncles and one aunt died of tuberculosis, one great aunt of cancer.

Menstrual History.—First menses at eleventh year; regular; monthly flow scant, lasting five days; no pain.

History of Present Complaint.—Patient last menstruated two weeks ago; flow freer than usual, but no pain. Flow in December last—*i. e.*, three months ago—was very slight. In January, the succeeding month, not any at all. Up to November, 1893, menstrual history was normal, periods occurring about first week in every month. November, it appeared on the 14th, same as usual, save it was offensive, only having been so once or twice before. Felt perfectly well; no pain. In December menstruated on 22d; less in quantity; still offensive; three weeks overdue. On the night of the 29th, while playing cards, feeling perfectly well, patient bent over the table to make a "play"; just as she did so was seized with a sharp, shooting pain, knifelike in character, in left hypogastric region, which seemed to pass from front to back. Previously to this paroxysm had had no tenderness or sensitiveness in this region. Pain was so acute that it made patient start up. She immediately became giddy, everything was blurred before her. She did not completely lose consciousness, but was compelled to lie down, however. After a moment or two the acute pain ceased, followed by a dull aching and feeling of soreness through that side, which became slightly easier by next morning. During the night patient had a slight hæmorrhage from vagina; no casts or clots passed. Patient remained in bed the following day on account of pain and nausea.

On the night of the 31st, two nights subsequent to the initial paroxysm—patient during this time having been more or less under the influence of an opiate, as pain and tenderness over entire abdo-

men were so marked—she got up from her bed to urinate, and remembers just having placed herself upon the vessel, after which she knew of nothing until she found herself in bed. She was not conscious of any increase in the pain or any feeling of fainting. She had been found lying upon the floor unconscious, face pale and blanched, and had been put to bed; feeling of weakness was not marked. During following month no flow; pulse fair; temperature, 103°; abdomen exceedingly painful and tender, very tense and hard; bowels constipated; would lie on her back with knees drawn up; marked nausea and vomiting. In February patient became better. Flow freer than usual.

Immediate Condition.—Well nourished; bright complexion; urination painful and frequent; analyses normal; locomotion painful and difficult; slight offensive leucorrhœal discharge; pain dull, aching in character, in left ovarian region, extending down thigh; area of hardness in abdomen to right of median line; temperature, 99°; pulse, 100.

Examination.—Abdomen full, symmetrical; no lineæ albicantes; on palpation, walls thick, extending from umbilicus to pubes, and on either side, about 10 cm., is felt a hard, smooth mass, non-fluctuant; abdomen elsewhere negative. *Per vaginam*, outlet slightly relaxed; cervix within 2 cm. of outlet; lips flattened and soft. Uterus anterior to a mass slightly enlarged; the mass fills entire pelvis; somewhat movable, smooth surfaces, non-sensitive; seems to extend slightly more to right side; lateral structures not outlined.

Diagnosis.—Extra-uterine pregnancy. Tubal rupture.

Examination under Ether.—A cystic tumor, convex above and almost rising to umbilicus, about 14 × 18 cm., more on right side. Fluctuation more or less boggy. *Per vaginam*, whole pelvis choked by mass which is distinctly fluctuant and projecting down into posterior fornix, jamming uterus in anteposition behind symphysis, so that cervix is felt about 3 cm. behind outlet, and fundus vertically above this, with surprising distinctness.

Operation, March 1, 1894.—Puncture, evacuation, and drainage of sac *per vaginam;* duration, fifteen minutes. Sac supported by an assistant with flat of hand above, while anterior lip of cervix was caught and drawn down moderately, when it was held by another assistant. Then a pair of sharp-pointed scissors was "boldly" thrust into sac, 3 cm. posterior to cervix, upward and in a curved direction,

first toward third sacral vertebra and then toward superior strait. On opening scissors, immediately there gushed out black-brown fluid, followed by pale-brown clots. Then large, blunt scissors were introduced, and opened in sac, dilating it 3.5 cm. from side to side; free exit of large quantity of black fluid and clots, sac falling together as contents were discharged. Finger introduced and sac palpated bimanually with one finger on abdomen. Its lateral walls and vault found everywhere lined by brown blood clots, but separated from abdominal cavity by adhesions. Posterior surface of uterus showed uterine body enlarged about once and a half. Sac cavity washed out with glass catheter and packed loosely with iodoform gauze. No hæmorrhage save slight flow at last of bright blood.

Convalescence.—Pack removed third day. Small amount of blood, serous discharge, non-offensive. Has had some severe paroxysms of pain at times. On sixth day patient felt so well that she sat up. Had boric-acid douches every other day, followed by introduction of small pack. On tenth day patient took a few steps. On twelfth day complained of pain, more or less shooting in character, through abdomen generally. Face pale. That afternoon pack removed and irrigation commenced. As pack was withdrawn, a small amount of purulent discharge followed. When the douche was commenced it was noticed that the return flow was very slight, containing particles of necrotic material. Suddenly patient screamed out, complaining of very acute pain; became very pale, bathed in a cold sweat; hands and nails blanched; eyes glassy in appearance; pulse became weak and of small volume. Pain referred to left hypogastrium, just above umbilicus. By early evening patient was in a condition of collapse. Abdomen opened through median line. Marked and diffuse peritonitis. Cavity filled with watery, milky fluid. Lateral incisions then made in either flank; peritonæum attached to skin to promote drainage, and gauze in flanks and center above. Patient's convalescence from then on was uninterrupted, slow but steady.

Result.—Discharged on her fifty-fourth day, well. Almost no discharge from vagina. Drain tracts in abdomen healed.

Case V.—Mrs. E. W., admitted October 1, 1894, aged thirty-three years; white; married twice; I-para, by first union, ten years of age; no miscarriages. O-para, no miscarriages, by second union.

Past History.—Had small-pox at five years; pneumonia at seven years. As an adult health has been very good.

Menstrual History.—First menstruated at twelve years of age. Regular, monthly, until marriage, when flow came on every three weeks or so.

History of Present Complaint.—Last period commenced about six weeks ago, and has continued constantly up to present time. Flow not very copious; clear at times, again thick and clotted. About same time was taken with severe pains in lower abdomen, and especially left side; was compelled to go to bed; these pains have continued right along, accompanied by severe backache.

Immediate Condition.—Has lost flesh within last week; feels weak and greatly debilitated; tongue coated; no urinary difficulty; pulse only of fair volume; temperature normal.

Diagnosis.—Extra-uterine pregnancy. Tubal rupture.

Operation, October 4, 1894.—Exploratory cœliotomy; closure of abdomen; puncture of sac *per vaginam* elected. Abdominal incision over mass, pushing forward lower abdominal wall to 6 cm. above symphysis. Fundus uteri elevated, exposed at summit of mass directly behind abdominal wall. Posterior to this, pelvis choked with inflammatory mass indistinct in its relations on account of general intestinal adhesions; these flat and vascular, bleeding on slightest separation. Pelvis choked on all sides with mass adhering to walls, rectum, and uterus. On account of universal fresh adhesions of small and large intestines, vaginal route elected. Sharp-pointed scissors plunged in through posterior fornix, followed by discharge of fluid (dark claret-colored) and clotted blood —about a quarter of a litre in amount. Incision dilated; sac washed out and packed with iodoform gauze.

Convalescence uninterrupted.

Result.—Discharged, well, on twenty-first day.

Case VI.—Mrs. S. M., admitted September 13, 1895, aged forty-one years; white; married twenty years; VI-para; youngest child aged two years six months; labors not difficult; five miscarriages; no trouble noted.

Past Health good.

Menstrual History.—First menses at fifteenth year; regular until of late; flow free, lasting five to six days; slight bearing-down pains for first two days.

History of Present Complaint.—About three months ago patient was seized with sudden sharp pain in lower abdomen. She became very faint, but did not lose consciousness; she was compelled to go

to bed, her abdomen becoming enlarged and tender. The attack of pain came on at the time for her regular "sickness," which had simply been a "mere showing" for the two preceding months. After the paroxysm of pain she had a free bloody discharge for four weeks containing blood clots. The bleeding ceased for two weeks, then began again, lasting three weeks. Since the first paroxysm, three months ago, patient has had three similar ones, each confining her to her bed for about a week. Pain most severe on left side. Non-aching in character, save when a paroxysm comes on; then it is very acute.

Immediate Condition.—Greatly debilitated; has lost flesh; bowels constipated; face pale and anæmic; temperature, 99°; pulse, 100.

Examination.—Outlet relaxed; veins purplish; cervix softened; at once shades off into a large mass, filling both sides of pelvis, but especially prominent on right side; mass globular, tense, and apparently slightly fluctuant, resembling—to touch—uterus in pregnancy.

Diagnosis.—Extra-uterine pregnancy. Tubal, right, ruptured.

Operation.—Puncture of sac *per vaginam,* followed by profuse hæmorrhage. Subsequent cœliotomy on account of profuse hæmorrhage. Point of greatest fluctuation in posterior *cul-de-sac* punctured with sharp scissors, followed by the removal of a 3 + -months fœtus, and a profuse discharge of dark bloodlike fluid. In a few moments the fluid became very bright in color and showed that a free, fresh hæmorrhage had been started up. This could not be controlled by packing, and, as it was so profuse, it was deemed expedient to go into the abdomen. Median-line incision made; free blood found in cavity, and which oozed out of incision. Patient's condition by this time plainly showed that no time could be lost, so left side was quickly tied off. Then a hystero-salpingo-oöphorectomy was done according to Dr. Kelly's method. The ectopic sac and placenta rolled up and out. Patient's pulse had reached by this time 160, so 700 c. c. salt solution infused into radial artery.

Convalescence slightly interrupted. On fifth day, pack removed, drain having been very effective, as outer piece (third) was well saturated. On removal of gauze, no fluid oozed out. A fibrinous exudate covered the piece first introduced into sac. Five days later, without any apparent cause, temperature reached 103°; patient seemingly doing very well. Next day temperature 104°; no chill; little or no pain. One small drain introduced into sac. Tem-

perature gradually coming down to normal. From then on, convalescence rapid and uninterrupted.

Result.—Discharged, twenty-ninth day, well.

Case VII.—Mrs. E. N. W., admitted December 14, 1895, aged twenty-eight years; white married two years; I-para, aged twelve months; labor normal; remained in bed four weeks, on account of a slight tear of perinæum, which was immediately repaired; no miscarriages.

Past Health.—Never healthy; since puberty has been very nervous. When sixteen years of age had a fall which hurt her back, and has suffered some with backache ever since. Six years ago she was in bed nine weeks with nervous prostration. When eighteen had a congestive chill, said to have been due to "uterine trouble."

Menstrual History.—First menstruated at twelve years of age. Regular, save four months following labor. Before her period of gestation she usually suffered with dull aching pain in lower abdomen, not definitely localized, beginning with flow and lasting one or two days. Some backache. Flow scanty; duration, three to four days. Since labor, has had little or no pain.

History of Present Complaint.—Last menstruated November 19th —*i. e.*, twenty-five days ago. Period previous to this one nearly six weeks before. One day, while ascending stairs, she had a sharp pain in lower abdomen, not localized, lasting one to two hours. She then went out of doors for a walk, having no especial discomfort. On following day, while walking, had another attack of pain similar to the first one, though somewhat more severe; this lasted twenty-four hours. It was during this attack that her menstrual flow commenced, the pain ceasing as the menstrual flow became well established. There was nothing peculiar about flow, which lasted five days. She felt comparatively well for several days succeeding cessation of flow, when suddenly one day, while she was standing at the table, but making no unusual exertion, she had a sharp, cutting pain in lower abdomen, not localized; felt as if "something had given way," this being followed by a gush of "pure blood from vagina"; nothing peculiar in the appearance of the blood. The pain continued for nearly thirty-six hours very severe; the pain at first was more in left side, then seemed to move over to right, and has continued ever since, though somewhat less in severity. About a week ago noticed swelling in left lower abdomen about size of a small egg. This seemed to decrease a little

in size after a few days. At the time of severe pain, and following it, bowels moved frequently; abdomen became quite tender; pulse never went over 106.

Immediate Condition.—Slightly anæmic; tongue coated; micturition frequent and painful; urinary analyses normal; pulse, 100; temperature, 98.6°; pain in lower abdomen; uterine hæmorrhage.

Diagnosis.—Extra-uterine pregnancy. Tubal, left, ruptured.

Operation.—Puncture of sac *per vaginam;* 750 c. c. blood coagula; removal of left tube cast; drainage. Exploratory puncture; no flow through canula, owing to its becoming clogged with a coagulum. Scissors then plunged in; then, opening, sac dilated with fingers in median line posterior to cervix, 3 cm. wide. Evacuated 750 c. c. clots like currant jelly. Whole pelvis choked, but no opening into abdomen. Uterus was pushed forward on left. Large clots, adhering to wall of sac, pulled over by fingers. Whole evacuation throughout assisted by abdominal hand; masses at times even expressed this way. Tubal cast felt like hard cylindrical mass on left side, high up; removed with fingers and delivered at vaginal incision by grasping it with Museaux forceps and making deep pressure into pelvis from above. No hæmorrhage from sac at all, but oozing from recto-vaginal sæptum; this had to be checked by catgut sutures. Sac lightly packed with gauze.

Convalescence uninterrupted. Pack removed fifth day.

Result.—Discharged twentieth day, well.

Case VIII.—Mrs. E. I., admitted January 25, 1896, aged thirty-one year; white; married eleven years; IV-para, youngest six years; labors normal; puerperia normal; no miscarriages.

Past Health good.

Menstrual History.—Menses began at eleven years; only fairly regular; duration, three days. Has always suffered much pain with flow. Since present complaint commenced, flow has been profuse, containing numerous clots.

History of Present Complaint.—Last menstruated ten days ago; flow profuse. In September, 1895—*i. e.*, four months ago—while sewing, she had a feeling of fullness in left lower abdomen, and severe pain of rather sharp character. At this time patient had quite a profuse offensive leucorrhœal discharge. For about a year previously patient had been treated with applications and tampons for some supposed uterine trouble. After this first attack, which lasted

an hour, she felt fairly well until next day, when a similar paroxysm of pain came on, and the following day still another, even more severe than the others, and lasting several hours. Every few days pain, paroxysmal, returned for two weeks or so. Then her physician commenced making applications. After this time she began to bleed, continuing until about Christmas—ten weeks. The paroxsms of pain continued also, and during these she would pass rather large quantities of blood. She grew then slightly better; was able to go to the doctor's office. After every application she suffered intensely. About two weeks ago she had a sudden attack of very violent pain in the whole lower abdomen, and has suffered intensely up to present time. Abdomen became exceedingly tender; would have to lie with thighs well flexed on abdomen, straightening them out causing much pain.

Immediate Condition.—Fairly well nourished; mucous membranes pale; face has a troubled expression; patient lies moaning with pain referred to right ovarian region. Micturition exceedingly painful. Has of late had much nausea and vomiting. Pulse, 135, weak; temperature, 102°.

Examination.—Outlet relaxed. Uterus, left lateral, flexed on pelvic floor. Mass lies to right and does not seem to touch Douglas' pouch, but to right spherical in contour, being about 10 cm. in diameter, seeming to lie in front of broad ligament.

Diagnosis.—Extra-uterine pregnancy. Tubal rupture, suppurative, right.

Operation, January 27, 1896.—Puncture of sac *per vaginam.* Evacuation of large number of clots. Removal of well-formed fœtus. Drainage. Usual vaginal incision made, posterior to cervix, upward and to the right. Then opening enlarged. After bringing away numerous blood clots, Dr. Kelly said he felt the fœtus. At the same time he brought it out. Sac irrigated and lightly packed with gauze.

Convalescence slow. Temperature almost immediately dropped to normal, and pulse steadily improved. But patient suffers at times with acute pain in right ovarian region and painful defecation.

Discharged thirty-sixth day. Save a feeling of soreness through abdomen, and more or less dull constant pain, patient's condition was excellent. Vaginal examination disclosed some slight thickening along right broad ligament, but no mass.

Case IX.—Mrs. L. P., admitted February 4, 1896, aged twenty-six years; white; married five years and a half; O-para; no miscarriages.

Past Health.—Not very good. When quite small had "congestion of lungs, liver, and brain." Had diphtheria at sixteenth to seventeenth year of age.

Menstrual History.—Menstruated first at fourteen years of age; never regular; intervals up to three months ago varied from two to six weeks. For three months there has been irregular hæmorrhages. Pain has always been burning, bearing down in character, for first two days or so, over whole abdomen and down thighs; only recently has it become localized. Usually flow lasted seven days. Since it has become constant; pain much worse in right ovarian region.

History of Present Complaint.—In 1887 had an attack of very severe abdominal pain, but no fever, nor other signs of any inflammatory trouble. Since marriage has had profuse and painful menstruation, more marked than before. Three months ago she began to have irregular hæmorrhages. These would last variable lengths of time. The last one has continued since December 22d, flow being quite profuse, dark, and clotted. Accompanying these hæmorrhages were attacks of severe burning and bearing-down pains; occasional nausea. Did not obtain any history of a decided cessation of menses for any definite space of time.

Immediate Condition.—Fairly well nourished; lips and mucous membranes not a good color; has a profuse leucorrhœal discharge, non-offensive nor irritative. Micturition painful; bowels constipated. Abdomen tender and sensitive to gentle pressure. Pulse, 110, not strong; temperature, 100° to 101°.

Examination.—Most noticeable fact was the necessity of a differential diagnosis between an extra-uterine sac and a fibroid. This was done by careful bimanual examination, obtaining a sense of elasticity and some slight impression of fluctuation. Mass filled posterior pelvis, rather more on right side, and was intimately adherent to whole posterior uterine surface. On left side, in crack between mass and wall, left tube and ovary felt normal. On right, at uterine cornu, intimately connected, could be felt mass, with tube flat on top of it.

Diagnosis.—Extra-uterine pregnancy. Tubal, ruptured, third month (?).

Operation, February 5, 1896.—Vaginal puncture of sac; evacuation of blood coagula. Vaginal incision made by sharp-pointed scissors; then opening sac dilated $2\frac{1}{2}$ cm.; removal of a fair amount of blood clots and a female fœtus; sac washed out and packed with gauze.

Convalescence.—For first three days temperature and pulse greatly influenced; temperature reached 103° on second and third nights, then gradually dropped to normal and remained so.

Result.—Discharged, twenty-first day, well; pelvis clear.

Case X.—Mrs. M. C., admitted February 14, 1896, aged twenty-nine; white; married four years; O-para; no miscarriages.

Past Health good.

Menstrual History.—First menstruated at fifteen years of age; regular; monthly flow scant, generally bright red in color, lasting seven days; pain severe on first day.

History of Present Complaint.—Last period January 23d, rather more free than usual; no clots; lasted four days, accompanied by severe pain on the first day; no definite history obtained. Since marriage flow has been more profuse than formerly and more painful. Accompanying the periods she has had paroxysms of severe cramplike pain, followed by increase in flow, abdomen becoming sore and tender. Patient consulted physician more on account of abdominal pain at time of menstrual flow than for any definite symptom of present trouble.

Immediate Condition.—Well nourished; mucous membranes pale; no urinary trouble; defecation only slightly painful; pulse, 100; temperature, 99.3°.

Examination.—Outlet slightly relaxed; cervix pointing at outlet; fundus immediately beneath abdominal wall; posterior to uterus is a peculiar boggy mass, which is not connected with uterus; fills Douglas' *cul-de-sac*. This mass does not seem to be distinctly fluctuating, but has a peculiar boggy sensation. It rises three fingers' breadth above fundus uteri, is slightly movable, and gives decided sensation of an extra-uterine sac; immediately beneath the surface small, hard projections are felt.

Diagnosis.—Extra-uterine pregnancy. Tubal, ruptured; intraligamentary (?).

Operation, February 17, 1896.—Puncture of sac *per vaginam;* evacuation; drainage. Most prominent point on mass, posterior to cervix, selected as point for puncture; scissors thrust into sac,

evacuating a pint of thick grumous material and great number of clots. Sac distinctly encapsulated, and not communicating with abdominal cavity. Cavity thoroughly irrigated and packed.

Convalescence uninterrupted; most rapid.

Result.—Cured, discharged, fourteenth day, excepting slight induration in either fornix; pelvis clear.

Case XI.—Mrs. C. (seen by Dr. Kelly, February 18, 1896, in consultation with Dr. C. Hummell and Dr. Coover at her home in Pennsylvania), aged thirty years; white; married; V-para; oldest child seven years, youngest, fifteen months. Labors: first, doubtful, may have been instrumental; second, multiple pregnancy; twins; both living at birth; no miscarriages.

Past Health.—Robust woman until present attack.

Menstrual History.—First menstruated at about fourteenth year; irregular first to fifth months. After birth of first child flow did not return for fifteen months; nursed child. More or less pain has accompanied flow.

History of Present Complaint.—One month ago, while menstruating, went out to dinner; flow had been on then for three weeks, about as usual in character. While sitting at the table, was seized by a violent, cramplike pain in lower abdomen, agonizing in severity; was not localized; felt very faint, but did not lose consciousness; became profoundly blanched; returned to her home, flow becoming much less—a mere "leak"—for next two weeks; got up next morning and went to church; returning home, went to bed for a day or so; on getting up, was unable to remain out of bed for more than a few hours, felt so exhausted. Ever since has had repeated attacks of pain in afternoon and early morning, not marked as the morning wore on. Pains acute; traveled over entire abdomen.

Immediate Condition.—Patient lies with eyes closed; impossible to arouse her or secure her attention in any way; constantly moaning, intermingled now and then by a sharp outcry; skin and mucous membranes blanched; face and lips of a livid hue; eyes sunken and dull; pupils contracted; marked evidence of pain on pressure over lower abdomen; for last four days has had incontinence of urine; trace of albumin present, absent heretofore; bowels usually constipated, though easy to move. For last week patient has been in a semi-comatose state; has not recognized her family; has had delusions of "cats," etc., being in her room. Pulse has

been running from 80 to 110, very small in volume; temperature, 99° to 101°.

Examination.—Abdomen normal in size; distinct sense of resistance over whole lower abdomen, half way to umbilicus, but no vaulted prominence *per vaginam;* mucous membrane normal in color; cervix normal in size; small; no secretion from "os" posterior to cervix; pelvis filled from side to side with irregular, somewhat boggy mass; well-defined resistance to pressure; no fluctuation; no hardness, as in suppuration; uterus appears to be anterior to mass.

Diagnosis.—Extra-uterine pregnancy, tubal.

Operation, February 18, 1896.—Puncture of sac *per vaginam;* evacuation of a litre of blood clots, with large amount of fluid blood; drainage. Patient in a most precarious condition; delirious, weak, and a very small, rapid pulse. With sharp-pointed scissors vaginal incision made posterior to cervix; then dilated enough to admit four fingers; an exceedingly large number of blood clots evacuated—one half litre—not counting the fluid blood; sac then irrigated and lightly packed with gauze. Patient stood operation well, and reacted from the anæsthetic nicely; pulse about 120; no hæmorrhage.

Convalescence.—Patient's mental condition better, but she never became entirely rational. Her pulse improved, and temperature came down to nearly normal, then went up a degree or so. She seemed to do fairly well for first four days, though on sixth day she died, apparently uræmic.

Result.—Death, sixth day.

Case XII.—F. S., white, married four years; nullipara; no miscarriages.

Last regular menstruation four months and a half ago.

Present Condition.—Not anæmic; constipated; locomotion painful; rapid pulse; paroxysmal pains; constant hæmorrhage; tumor in left ovarian region.

Onset of Symptoms.—Sudden; bloody discharge from vagina, followed by cessation of menses and pain.

Examination.—Abdomen somewhat tense; fundus deflected to right; a hard circumscribed mass extending well up into left broad ligament.

Operation, May 9, 1896.—Emptying of sac *per vaginam;* evacuation of coagula; fœtus delivered; irrigation of sac; gauze drain.

Convalescence normal.

CASE XIII.—Mrs. T. E. (Sanatorium), aged twenty-six years; white; married three years and a half; II-para, twenty-eight and ten months. First labor difficult; in house ten weeks; complicated with grip; second labor easy.

Last regular menstruation January 1, 1896, first since last period of gestation commenced; since 1st of January has had flow monthly, but of irregular date.

Present Condition.—Thin, not anæmic; pain in left side.

Onset of Symptoms.—Not sudden, but of steady development; first return of menstruation followed by acute attacks of pain, somewhat paroxysmal, unlike any accompanying menstrual pain before.

Examination.—Mass on left side, attached to the uterus, but movable, independently; indistinct sense of fluctuation, unlike either an abscess or an ovarian tumor. Vagina slightly bluish.

Operation.—Abdomen opened and sac found covered by strong bladder, sigmoid, and rectal adhesions; sac opened and evacuated *per vaginam* under guidance of a hand in the abdomen; gauze drain; recovery without febrile reaction. Returned home in twenty-three days.